

Amendments to the Specification

In the paragraph starting on page 4, starting with "In order to solve the above and other problems, according to a first aspect of the current invention," please amend as the following:

In order to solve the above and other problems, according to a first aspect of the current invention, a method of improving resolution in color image data, includes the steps of: ~~a) inputting color image data from a sensor having a specific unit pattern of color-component specific photo elements; b) generating chroma values for each of the color-component specific elements from the color image data; c) adjusting the chroma values according to the specific pattern of the color-component specific elements; and d) estimating an intensity value based upon the chroma values adjusted in the step c) and the color image data from the step a).~~ a) placing over a unit area a predetermined spatial pattern of color-component specific photo elements in a sensor, each of the color-component specific photo elements filtering a single predetermined color-component over one of sub-unit areas in the unit area, each of the color-component specific photo elements corresponding to a single pixel; b) sampling color image data at the sensor; c) generating chroma values for each of the color-component specific elements from the color image data; d) simultaneously adjusting the chroma values with the step (c according to the specific spatial pattern of the color-component specific elements based upon coefficients that spatially correspond to a specific set of the color-component specific photo elements; and e) estimating an intensity value for each of the pixels based upon the chroma values adjusted in said step d) and the color image data from said step b).

In the paragraph starting on page 5, starting with "According to a second aspect of the current invention," please amend as the following:

According to a second aspect of the current invention, a system for improving resolution in color image data, includes: ~~a single-plane color image sensor having a predetermined spatial pattern of color-component specific photo elements for generating color image data; an interpolated chroma value generator connected to said single-plane color image sensor for generating interpolated chroma values according to the spatial pattern; and an intensity estimator connected to the interpolated chroma value generator and the single-plane color image sensor for estimating an intensity value based upon the interpolated chroma values and the color image data.~~ a color image sensor having multiple sets of a predetermined spatial pattern of color-component specific photo elements for generating color image data, each of the color-component specific photo elements filtering a predetermined color-component over one of sub-unit areas in a unit area, the color image sensor sampling the color image data for the unit area using the color-component specific photo elements, each of the color-component specific photo elements corresponding to a single pixel; an interpolated chroma value generator connected to the color image sensor for generating interpolated chroma values according to the spatial pattern and for simultaneously adjusting the chroma values based upon coefficients that spatially correspond to a specific set of the color-component specific photo elements; and an intensity estimator connected to the interpolated chroma value generator and said color image sensor for estimating an intensity value for each of the pixels based upon the interpolated chroma values and the color image data.

In the paragraph starting on page 5, starting with "According to a third aspect of the current invention," please amend as the following:

According to a third aspect of the current invention, a program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps of reproducing a high-resolution image, the method steps including: ~~j) inputting color image data from a sensor having a specific unit pattern of color component specific photo elements; k) generating chroma values for each of the color component specific elements from the color image data; l) adjusting the chroma values according to the specific pattern of the color component specific elements; m) further adjusting the chroma values for smoothing the chroma values adjusted in the step l); n) estimating an intensity value based upon the chroma values twice adjusted in the steps l) and m) and the color image data from the step j); o) adjusting the intensity value for an improved edge characteristic after the step n); and p) generating RGB data based upon the chroma values adjusted in the step m) and the intensity value adjusted in the step o).~~ k) placing over a unit area a predetermined spatial pattern of color-component specific filter elements on a single plane in a sensor, each of the color-component specific filter elements filtering a predetermined color-component over one of sub- unit areas in the unit area, each of the color-component specific filter elements corresponding to a single pixel; l) sampling color image data for the unit area using the color-component specific filter elements, a portion of the color image data being sampled only through a corresponding one of the color-component specific filter elements for a corresponding one of the sub-unit areas; m) generating chroma values for each of the color-component specific elements from the color image data; n) simultaneously adjusting the chroma values with the step m) according to the specific spatial pattern of the color-component specific elements based upon coefficients that spatially correspond to a specific set of the color-component specific filter elements; o) simultaneously adjusting the chroma values for smoothing the chroma values in the step n); p) simultaneously estimating an intensity value for each of the pixels based upon the chroma values twice adjusted in said steps n) and o) and the color image data from the step l); q) adjusting the intensity value for each

of the pixels for an improved edge characteristic after the step p); and r) generating RGB data based upon the chroma values adjusted in the step n) and the intensity value adjusted in the step q).

Please add the following after the paragraphs starting on page 5, starting with "According to the third aspect of the current invention".

According to a fourth aspect of the current invention, a program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps of reproducing a high-resolution image, the method steps includes: j) generating color image data from at a sensor having a specific unit spatial pattern of color-component specific photo elements, each of the color-component specific photo elements corresponding to a single pixel; k) generating chroma values for each of the color-component specific elements from the color image data; l) simultaneously adjusting the chroma values with the step k) according to the specific unit spatial pattern of the color-component specific elements based upon coefficients that spatially correspond to a specific set of the color-component specific photo elements; m) further adjusting the chroma values for smoothing the chroma values adjusted in the step l); n) estimating an intensity value based upon the chroma values twice adjusted in the steps l) and m) and the color image data from said step j); o) adjusting the intensity value for an improved edge characteristic after said step n); and p) generating RGB data based upon the chroma values adjusted in said step m) and the intensity value adjusted in said step o).

According to a fifth aspect of the current invention, a method of improving color image data, includes the steps of: a) placing over each of unit areas a predetermined spatial pattern of color-component specific filter elements in a sensor, each of the color-component specific filter elements filtering a single predetermined color-component over one of sub-unit areas in the unit area, each sub-unit area corresponding to a single pixel;

b) sampling color image data for the unit areas using the sensor; c) generating chroma values for each of the color-component specific elements from the color image data; d) simultaneously adjusting the chroma values with the step c) according to the specific spatial pattern of the color-component specific elements based upon coefficients that spatially correspond to a specific set of the color-component specific filter elements; and e) estimating an intensity value based upon the chroma values adjusted in said step d) and the color image data from said step b) for each of the pixel.

According to a sixth aspect of the current invention, a system for improving color image data, including: a color image sensor having a predetermined spatial pattern of color-component specific photo elements for generating color image data, each of the color-component specific photo elements filtering a single predetermined color-component over one of sub-unit areas in a unit area corresponding to a single pixel, the color image sensor sampling the color image data; an interpolated chroma value generator connected to the color image sensor for generating interpolated chroma values for each of the pixels according to the spatial pattern and for simultaneously adjusting the chroma values based upon coefficients that spatially correspond to a specific set of the color-component specific photo elements; and an intensity estimator connected to the interpolated chroma value generator and the color image sensor for estimating an intensity value for each of the pixel based upon the interpolated chroma values and the color image data.

According to a seventh aspect of the current invention, a program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps of reproducing a high-resolution image, the method steps including: k) placing over each of unit areas a predetermined spatial pattern of color-component specific filter elements in a sensor, each of the color-component specific filter elements filtering a single predetermined color-component over one of sub-

unit areas in the unit area, each sub-unit area corresponding to a single pixel; l) sampling color image data for the unit area using the color-component specific filter elements; m) generating chroma values for each of the color-component specific elements from the color image data; n) simultaneously adjusting the chroma values the step m) according to the predetermined spatial pattern of the color-component specific elements based upon coefficients that spatially correspond to a specific set of the color-component specific filter elements; o) further adjusting the chroma values for smoothing the chroma values adjusted in the step n); p) estimating an intensity value for each of the pixels based upon the chroma values twice adjusted in the steps n) and o) and the color image data from the step l); q) adjusting the intensity value for an improved edge characteristic after the step p); and r) generating RGB data based upon the chroma values adjusted in said step o) and the intensity value adjusted in the step q).